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A Study of the Frequency of Use of the University Medical Services in Relation to Personality Factors and to Academic Achievement of Students at the University of North Carolina at Greensboro.

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UNIVERSITY OF NORTH CAROLINA AT
GREENSBORO

A Dissertation
Presented to
The Faculty of the Graduate School
The Louisiana State University
and
Agricultural and Mechanical College

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

by
Esther Boyd White

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ABSTRACT

The purpose of this study was two-fold: (1) to determine the relationship between the frequency of use of the Medical Services and personality traits of students, and (2) to determine the relationship of frequency of use of the Medical Services to academic achievement.

The subjects for this study were 164 women selected from the 1962-63 sophomore class. The subjects were chosen on the basis of attendance at the Medical Services (The Anna Gove Infirmary of the University of North Carolina at Greensboro, hereafter referred to as the Medical Services). Subjects were divided into two groups, high attenders and low attenders, on the basis of the number of calls reported on their medical records for their freshman year (1961-62). There were eighty women who had eight or more calls. These were the high attenders. The eighty-four students in the low attender group each had one call.

The Group Form of the Minnesota Multiphasic Personality Inventory was administered to the 164 subjects. Answer sheets were scored by machine, and profiles drawn from them. Two clinical psychologists from universities in different states independently interpreted the profiles. Each profile was placed in one of five personality patterns: normal, neurotic, psychotic, character disorder, or K (invalid).

The Chi-square test of independence in contingency tables was used to test the null hypothesis that no relationship would be found between attendance at the Medical Services and the personality patterns of students. The obtained Chi-square, using the interpretation of the first rater was 10.08 with four degrees of freedom. This is significant ($P < .05$). A Chi-square of 3.839 with four degrees of freedom was obtained for the interpretation of the second rater. This lies between the 0.10 and .05 level of probability, and approaches significance ($9.488 = P$ at .05). A comparison of normals with deviants as judged by the two raters was high in agreement, a Chi-square of .121 with one degree of freedom ($P > 0.70$). On the basis of the interpretation of the first rater, and the closeness of agreement between the raters the null hypothesis was rejected.

Grade point averages earned by the subjects during their freshman year were obtained from the Office of the Registrar of the University. On the basis of ranked grade points a scale was devised. Each group of subjects (high attenders and low attenders at the Medical Services) was divided into three categories: (1) the number of subjects in the top one-third of the scale, (2) the number in the middle one-third of the scale, and (3) the number in the bottom one-third of the scale.

The Chi-square test of independence in contingency tables was used to test the null hypothesis that no

relationship would exist between attendance at the Medical Services and academic achievement. The computed Chi-square of 2.5687 with two degrees of freedom was not significant ($P < .30$). The null hypothesis was not rejected.

The most important findings in this investigation were:

1. A significant relationship was found to exist between the use of the Medical Services and personality patterns of college women as measured by the MMPI.
2. College women who had a high attendance record at the Medical Services had significantly higher deviant personality patterns than those with low attendance.
3. The relationship between the use of Medical Services and personality patterns of college women with low attendance at the Medical Services approached statistical significance.
4. A significant relationship was not found between attendance at the Medical Services and academic achievement.

Conclusions were:

1. A significantly greater number of the subjects who had high attendance records at Medical Services have deviant personalities than do those with low attendance records.

2. A significant relationship exists between the use of the Medical Services and personality patterns as measured by the MMPI.
3. There is not a significant relationship between the use of the Medical Services and academic achievement.

CHAPTER I

INTRODUCTION

Mental illness is one of the major health problems in the United States. Half the hospital beds in the United States are occupied by mental patients. It has been estimated that one million patients are disturbed enough to require hospitalization, and though it is not possible to know how many emotionally disturbed Americans there are who do not require institutional care an estimate has been placed at 15 million. Some physicians estimate that 70 per cent of the so-called physical ailments are really psychosomatic and involve emotional factors.¹

In the past fifty years there has been wide acceptance that stressful life circumstances could be major factors in disease. The accumulation of evidence indicates that chronic situations which have threatening significance may have far reaching implications for all human illness. Wolff² stated that:

Over the years in our laboratory, one organ or system of organs after the other has been studied in people

¹Benjamin F. and Zelma Miller. Good Health (Philadelphia: W. B. Saunders Company, 1960), pp. 2-22.

²Harold G. Wolff, "A Concept of Disease in Man," Psychosomatic Medicine, Vol. XXIV, No. 1 (January-February, 1962), p. 27.

functioning in the context of their home and work environment. It has been shown that all the mucous membranes of the body's organs may become vulnerable during or after periods perceived by the individual as threatening. At such times vasodilation, edema, diapedesis, hemorrhage, erosion, increased friability of tissue, lowered pain threshold, and organ function have been observed in the mucous membranes of the nose, upper airways, eyes, stomach, colon, bladder and vagina.

Gross reported³ that Selye found what is called a triad of changes appearing together when experimental animals were subjected to chemical stressors. The adrenal cortex became enlarged, the lymphatic structures shrank, and bleeding and deep ulcers developed in the duodenum and stomach. From further research and study Dr. Selye described the general adaptation syndrome (G.A.S.) to denote the evolutionary process which the body utilizes to cope with stress. This includes first, the alarm reaction in which the body mobilizes its forces for defense; second, the body enters a stage of resistance and is able to continue functioning under stress; third, and finally comes the stage of exhaustion in which the body breaks down and dies. Disease is a form of adaptation by which the organism copes with anything which threatens homeostasis and life. Illness might be considered a sign of health--the ability of the body to cope with pressures. The G.A.S. is simply a process of

³Nancy E. Gross, Living With Stress (New York: McGraw-Hill Book Company, Inc., 1958), pp. 52-53.

adaptation to life.

Daily emotional stresses such as irritations, tensions and anxiety have been found to serve as stressors as readily as can viruses, bacteria or chemicals, and these can produce illness. According to Richards:⁴

The individual who has been frustrated by the environment finds through illness, reassurance of security in his environment. His state of anxiety has been reduced by the achievement of a solution--inadequate though it is because it is incapacitating--to frustration of need for social recognition and acceptance. Such solutions have been termed psychosomatic, suggesting that certain physical symptoms are psychologically determined.

In recent years much emphasis has been placed on the relationship of personality traits and emotional stress to both physiological and psychological diseases and/or disorders. "Psychosomatic" has become a common, but, perhaps, misunderstood term in the vocabulary of the average American. Grinker⁵ said that:

"Psychosomatic" connotes more than a kind of illness; it is a comprehensive approach to the totality of an integrated process of transactions among many systems; somatic, psychic, and cultural. It deals with a living process that is born, matures, and develops through differentiation and successive stages of new forms of integration of parts and other wholes. It deals with stresses, strains, and adjustments, with acute emergency mechanisms, disintegration, and chronic defensive states and diseases.

⁴Thomas W. Richards, Modern Clinical Psychology (New York: The McGraw-Hill Book Company, Inc., 1946), p. 135.

⁵Roy R. Grinker, Psychosomatic Research (New York: W. W. Norton and Company, Inc., 1953), pp. 188-189.

Dunbar⁶ stated that stress arouses symptoms of anxiety until it is consciously recognized, and that failure of the general adaptation syndrome in response to stress results in disease. She added that personality and modes of life have a bearing on one's susceptibility to disease. Later she brought out that the personality profile has been used to predict the nature of physiological functioning and predisposition to illness.

Alexander⁷ reported that the results of work done at the Chicago Psychoanalytic Institute described characteristic emotional patterns which were found in different organic conditions. Seven psychodynamic patterns were found consistently in seven diseases. It is thought that patients with certain diseases have a specific emotional vulnerability toward stressful events as well as a specific organic vulnerability.

From studies made at Yale, Wedge⁸ concluded that the college age is second only to early childhood in personality development and may be a decisive period in the formation of

⁶Flanders Dunbar, Psychiatry in the Medical Specialties (New York: The Blakiston Division, McGraw-Hill Book Company, Inc., 1959), pp. 8-10.

⁷Franz Alexander, "The Development of Psychosomatic Medicine," Psychosomatic Medicine, Vol. XXIV, No. 1, January-February, 1963, pp. 13-23.

⁸Bryant M. Wedge (ed.), Psycho-Social Problems of College Men (New Haven: Yale University Press, 1958), pp. 1-11.

healthy adult personalities. Moreover, he continued, intellectual productivity has been shown to be "delicately dependent on personality factors."

In the light of the above information it would appear logical to expect to find a relationship existing between personality traits and emotional stress and illnesses of college women as reported by the Medical Services. Observation of and conferences with students who seem to fall into an over-use of the medical personnel category suggested to the investigator that emotional stress and personality difficulties might have led to illnesses which made certain students depend on Medical Service as an unconscious means of solving immediate problems. It was conjectured that such patterns of behavior might, also, affect the academic achievement of these young women.

Entering freshmen normally have problems of adjustment to college life. Many of them are away from home with its familiar and protective environment for the first time. Dormitory living, the necessity for self-imposed work schedules, exposure to new and differing philosophies of other students and of the faculty, a more intensive competition than was usually experienced in high school, and the responsibility for making decisions about social activities and spending money all pose problems which generate a degree of stress and strain that may lead to anxiety.

Most students apparently have the ability to make the

transition from high school to college life with a minimum of difficulty. For others adjustment is not easy and emotional stress may be manifested in physiological symptoms which also, may have an effect on academic work.

I. THE PROBLEM

Statement of the problem. The purpose of this study was two-fold: (1) to determine the relationship between the frequency of attendance at the Medical Services of the University of North Carolina at Greensboro* (hereafter referred to as the University) and personality traits of students, and (2) to determine the relationship of frequency of attendance at the Medical Services to academic achievement.

Importance of the study. Present day higher education is assuming responsibility for more aspects of student welfare than intellectual development. The additional services make it possible for students to more nearly realize their potential abilities. Two important functions of the University are the counseling and guidance services and the medical services. Physicians, psychiatrists, psychologists, nurses, health counselors, vocational counselors, academic counselors, the Dean of women and the house counselors comprise some of

*The University of North Carolina at Greensboro was The Woman's College of the University of North Carolina until July 1, 1963.

the personnel concerned with the personality characteristics which help or hinder students in their personal interaction, leadership, social understanding, choice of vocation, health status, and academic achievement. All personnel need to learn about psychological factors which make for better adjustment to life. Information from personality inventories seems to be reasonably helpful in giving such knowledge. If personality patterns could be used to pin-point the emotional problems and predict the health behavior of students early in their college careers each student would be able to gain more from her stay in college through better counseling. A demonstrated relationship between personality patterns and infirmity attendance could be of value in several other ways: (1) Medical Services could better plan for use of its time, facilities and personnel to help those individuals with personality problems. (2) Such information could be used by the Health Instruction Division in planning units of instruction and learning experiences. It would be of value in the health counseling of individuals which is a part of health teaching. (3) The counseling and guidance services (vocational, office of the Dean of Women and the house counselors, academic counselors) should be able to better understand and

help certain students with such knowledge.

II. LIMITATIONS AND DEFINITIONS

This study was limited to the attempt to find the relationship of frequency of use of the Medical Services of the Anna Gove Infirmary, at the University of North Carolina at Greensboro to (1) personality traits as measured by the Minnesota Multiphasic Personality Inventory (MMPI), and (2) the academic achievement as shown by grade point averages earned during the 1961-62 school year at the University.

Subjects in the study were 164 women selected from the 1962-63 sophomore class at the University. They were selected on the basis of high and low frequency of attendance at the Medical Services.

High attenders included those members of the 1962-63 sophomore class who were dormitory students in the year 1961-62 and made eight or more calls on the Medical Services during the 1961-62 school year.

Low attenders were those sophomores who were dormitory students during the 1961-62 term and made only one call on the Medical Services during their freshman year (1961-62).

A call was defined as one illness or disorder for which a visit was made to the Medical Services, even though the student may have returned for further therapy or may have been confined to bed for one or more days.

III. THE MINNESOTA MULTIPHASIC PERSONALITY INVENTORY

Personality measurement. Personality testing generally refers to measures of such non-intellectual aspects as emotional adjustment, social relationships, interests, attitudes and motivation. Although much effort has been put into research and study of this phase of psychological testing it lags behind because of the peculiar difficulties to overcome.⁹ It is difficult to observe typical behavior. One act cannot be considered typical. The influences of mood, experience, environment, and other factors fluctuate in any individual. Ratings and reports from others may be impressions, rather than typical behavior, and are subject to distortion by the perception of those who gave the data. Self-reports are subject to the kind of impression the reporter wishes to make. Behavior is more changeable than intelligence and ability.

The phrase "typical behavior" is an outgrowth of the behavioristic psychology viewpoint which is concerned with overt, observable responses; but personality assessment is

⁹Anne Anastasi, Psychological Testing (New York: The MacMillan Company, 1954), pp. 16-18.

better understood when the influence of the attitudes of the phenomenologic psychologists is recognized. Their viewpoint is concerned with the way the world appears to the individual. Many psychologists are more concerned with subjective reactions than the outward responses of the person because many important perceptions and reactions occur only within the individual.¹⁰

Ferguson¹¹ listed three objectives to be gained by the measurement of personality: (1) the better understanding of individual behavior; (2) the better understanding of group behavior, and (3) the better understanding of the interactions between individual and group behavior. Counselors would like to be able to describe, predict, and better control the behavior of maladjusted individuals. Later in the same book, Ferguson¹² said that one of the most popular methods of personality test construction is that which relies upon internal consistency. The second most popular is that which uses scores on other tests as criteria, and the least used method of personality test construction is that of using criterion groups that have been selected independently of the test to be validated.

¹⁰Lee J. Cronbach, Essentials of Psychological Testing (New York: Harper and Brothers, 1960), p. 461.

¹¹Leonard W. Ferguson, Personality Measurement (New York: The McGraw-Hill Book Company, Inc., 1952), pp. 1-2.

¹²Ibid., pp. 233-234.

Cronbach¹³ in discussing the interpretation of responses as diagnostic signs wrote that when responses are regarded as samples of behavior, transparent items are used and primary attention is paid to the content of the response. In this instance the subject can mislead the tester, but if the plan is to regard responses as signs, items used can have surface content which is irrelevant to what one wishes to measure, and even distorted responses may have diagnostic value. The "sign" principle is interpreted on an actuarial basis. Dr. Cronbach said that:¹⁴

The actuarial approach eliminates the assumption of honest self-report. The question "Is your health better or poorer than average for your age?" does not obtain valid facts about health. One person overrates his health in reporting; another who has only minor ills exaggerates them. If clinically diagnosed neurotics reply "poorer" more often than do normals, this answer may be diagnostic even when it is "untrue"--in fact, it may be diagnostic just because it is untrue. Empirical scales take the "attitude that the verbal type of personality inventory is not most fruitfully seen as a 'self-rating' or self description whose value requires the assumption of accuracy on the part of the testee in his observations of self. Rather is the response to a test item taken as an intrinsically interesting segment of verbal behavior, knowledge regarding which may be of more value than any knowledge of the 'factual' material about which the item superficially purports to inquire. Thus if a hypochondriac says that he has 'many headaches' the fact of interest is that he says this" (Meehl, 1945, p. 9).

Because criteria in the field of personality are controversial at best, construction of inventories using the

¹³Cronbach, op. cit., p. 457.

¹⁴Loc. cit.

"sign" principle has been rare. Psychiatric classification is one obvious point of departure. The Humm-Wadsworth Temperament Scale with empirical keys was developed to distinguish such groups as manic and paranoid. The authors of the Minnesota Multiphasic Personality Inventory used almost the same approach and many of the same items. The MMPI was published in 1942 and was "readily accepted, and remains today the most widely used and most widely investigated of questionnaires."¹⁵

General description of the MMPI. Cronbach¹⁶ stated that:

The Minnesota Multiphasic Personality Inventory (MMPI) holds a place among personality questionnaires comparable to that of the Strong among interest measures. It was constructed in a similar empirical manner and was subjected to exceptionally thorough research by its authors. It appeared at an opportune time, and great reliance was placed upon it during the rapid wartime and postwar expansion of clinical psychology. It contributed to and benefited from the postwar interest in clinical research and as a result has been studied more adequately than any other personality test. There are 689 titles included in a bibliography covering MMPI research through 1954; at that time, the number of MMPI studies was 100 per year and the rate was still increasing (Welsh and Dahlstrom, 1956).

Starke Hathaway, a psychologist, and J. C. McKinley, a psychiatrist originally constructed the MMPI to aid in clinical diagnosis of patients. The inventory is designed

¹⁵Ibid., p. 468.

¹⁶Ibid., pp. 469-470.

to provide a single test with scores on all the more important phases of personality. The instrument contains 550 statements covering a wide range of subject matter. The subject is asked to sort all of the statements into three categories: True, False and Cannot Say. The responses are counted to yield scores on four validity scales and nine clinical scales. A number of additional scales have been developed, but are less widely used. The time for administering the Inventory ranges from thirty to ninety minutes. Little instruction is necessary and for most subjects no supervision is required.

The items were arbitrarily classified under twenty-six headings as follows:¹⁷

1. General health (9 items)
2. General neurologic (19 items)
3. Cranial nerves (11 items)
4. Motility and coordination (6 items)
5. Sensibility (5 items)
6. Vasomotor, tropic, speech, secretory (10 items)
7. Cardiorespiratory system (5 items)
8. Gastrointestinal system (11 items)
9. Genitourinary system (5 items)

¹⁷S. R. Hathaway and J. C. McKinley, Minnesota Multiphasic Personality Inventory Manual. Revised 1951 (New York: The Psychological Corporation, 1951), p. 5.

10. Habits (19 items)
11. Family and marital (26 items)
12. Occupational (18 items)
13. Educational (12 items)
14. Sexual attitudes (16 items)
15. Religious attitudes (19 items)
16. Political attitudes--law and order (46 items)
17. Social attitudes (72 items)
18. Affect, depressive (32 items)
19. Affect, manic (24 items)
20. Obsessive and compulsive states (15 items)
21. Delusions, hallucinations, illusions, ideas of reference (31 items)
22. Phobias (29 items)
23. Sadistic, masochistic trends (7 items)
24. Morale (23 items)
25. Items primarily related to masculinity-femininity (55 items)
26. Items to indicate whether the individual is trying to place himself in an improbably acceptable light (15 items)

There are two forms of the MMPI. The Individual or card form is suitable for administration to cooperative subjects from about the age of sixteen and upward, if they are able to read. The second form is the Group Form which the investigator used in this study. It permits convenient administration to groups. The items are in a booklet which presents 566 items, all of which should be answered to

obtain the scores on the available scales (See Appendix, p. 61, for Group Form items). Sixteen items have been duplicated in the booklet to obtain more economical machine scoring of answer sheets. "For college, high school or professional people the results of the Group Form are practically identical with those of the Individual Form."¹⁸

The authors¹⁹ said that:

The Inventory as a whole was designed partly to lessen the conflict between the psychiatrist's conception of the abnormal personality and that of the psychologists and other professional workers who must deal with abnormality among more nearly normal persons. Many of the words in common usage, for example, apply to personality traits not easily carried over to the abnormal and not having clear-cut abnormal implications. The commonly used terms introversion-extroversion, neuroticism and inferiority are examples of concepts which rarely have specific value in practical psychiatry, but which may have value in describing the normal personality.

Description of the scales. The nine original clinical scales developed by the authors of the MMPI are:²⁰

1. Hs - hypochondriasis. A measure of the amount of concern over bodily functions. Those with high scores on Hs are unduly worried over their health, frequently complain of pains and disorders for which there is no clear organic basis. They are characteristically immature in their approach to problems and tend to lack insight.

¹⁸Ibid., p. 9.

¹⁹Ibid., p. 7.

²⁰Ibid., pp. 18-21.

2. D - depression. A high D score is an indication of poor emotional morale with a feeling of uselessness and inability to face the future with a normal optimism. Characteristically the high D scorer lacks self-confidence, and has a tendency to worry.
3. Hy - hysteria. Hy measures the degree to which the testee is similar to patients with conversion-type hysteria. High scorers are apt to have episodic attacks of weakness, fainting or epileptiform convulsions. Other symptoms may be general systemic complaints or specific ones such as paralysis, gastric complaints, writer's cramps or cardiac symptoms. These persons are more immature psychologically than any other group. This scale with Hs and D form the so-called neurotic triad and will identify the greater proportion of those persons, not under medical care, who are commonly called neurotic.
4. Pd - psychopathic deviate. This scale measures the similarity of the subject to the group of patients who have an absence of deep emotional response, an inability to profit from experience, and a disregard of social mores. These persons are usually likable and intelligent. They most frequently digress from social mores by lying, stealing, addiction to alcohol or drugs, and sexual immorality.

5. **Mf - masculinity-femininity.** This scale measures the tendency of masculinity or femininity of interest pattern. Separate scores are provided for the sexes. The Mf score may be important in vocational choice. It must not be assumed that high Mf scores of males indicate homosexual abnormality. This scale has been shown to have more clinical significance for males than for females.
6. **Pa - paranoia.** The Pa scale was derived by contrasting normal persons with a group of clinic patients who were suspicious, oversensitive, and had delusions of persecution. Persons with high Pa scores are difficult because they appear so normal when on guard, and are vengeful against control. Valid scores of 80 and above on this scale are nearly always significant of disabling abnormality, the range from 70-80 must be checked by clinical judgment.
7. **Pt - psychasthenia.** This scale is a measure of the similarity of the subject to psychiatric patients with phobias or compulsive behavior. Many individuals exhibit minor phobias which are rarely disabling. Compulsive behavior may be explicit or implicit. The phobias include all kinds of unreasonable fears.

8. Sc - schizophrenia. A measurement of the likeness of responses of the testee to those patients who have bizarre and unusual thoughts or behavior. About 60 per cent of observed cases diagnosed as schizophrenic were distinguished by the Sc scale. An appreciable number of cases not diagnosed as schizophrenics score high on this scale. Most profiles with a high Sc score will show several other high points. Pa, Pt, and Sc are referred to as the psychotic triad.
9. Ma - hypomania. The Ma scale measures marked over-productivity in thought and action. The Ma high scorer usually undertakes too many things, is active and enthusiastic, and may be depressed at times.
0. Si - the Social I.E. scale is not one of the original scales. It measures the tendency to withdraw from social contacts with others. This is not a clinical scale in the sense of being chiefly used with hospitalized patients. It is valuable for use with normals and has been useful with college women.

Anastasi²¹ points out a novel feature of the MMPI, the utilization of four validity scales. Validity is not used

²¹Anastasi, op. cit., p. 550.

here in the technical sense, but as a check on carelessness, misunderstanding, malingering, and the operation of response sets and test-taking attitudes. The four scales are:

1. The Question Score (?): the total number of items omitted from the Group Form or put in the Cannot Say category of the Card Form. Large question scores invalidate all others.
2. The Lie Score (L): based on items which put the subject in an acceptable light, but are unlikely to be answered favorably.
3. The Validity Score (F): a check on the validity of the entire record. A low score is a reliable indication that the subject's responses were rational and pertinent. A high F scale indicates scoring errors, carelessness, gross eccentricity, or malingering.
4. The K Score (K): used as a correction factor. It acts as a suppressor variable. The K score is a measure of test-making attitude which is related to both L and F, but is more subtle. A high K may indicate a defensiveness that borders on deliberate distortion in the direction of making a more normal appearance (faking good). Overly candid and self critical subjects tend to have low K scores. A

deliberate "faking bad" may be indicated by a low K score.

Scoring the MMPI.²² Before scoring, each paper should be inspected for unanswered items. If it is unfinished or if more than one item in 10 is unanswered the ? score must be computed. If no more than an average of one unanswered item occurs in every block of 15 items an "OK" is written in the space provided for the ? score. This indicates a T score of 50 to be plotted on the profile sheet. If more than one item in 10 is unanswered the raw score must be converted to a T score.

Raw scores on each scale are recorded on the profile form in the proper space. All scores except those of the validity scales (?, L, F, K) are converted to T scores by the formula

$$T=50+10\left(\frac{X_i-\bar{X}}{s}\right)$$

where X_i is the raw score, and \bar{X} and s the mean and standard deviation of the raw scores.

If the raw score for L is equal to or greater than 10 or if the raw score of F is equal to or greater than 16 there is a possibility that the profile may be invalid. Adding the

²² Hathaway and McKinley, op. cit., pp. 12-17.

appropriate amount of the K factor to five of the variables (Hs, Pd, Pt, Sc, and Ma) increases their discriminatory function. The amount of K and the T value of all raw scores are given on the profile form (See Appendix, p. 66).

Norms are reported for each clinical scale in the form of a standard score equivalent with a mean of 50 and a standard deviation of 10. These standard scores are plotted on the profile form. A score of 70 or above is the cut-off point for identifying deviations from the normal. Clinicians believe that scores markedly below 50 are also significant. Clinical use of the MMPI has emphasized that the pattern given by the whole group of scales (including the validating ones) rather than an individual score is to be used in evaluating a profile. Interpretation of profiles must be made by persons who have had extensive experience and particular training with the Inventory.

Reliability and validity of the MMPI. Hathaway and McKinley²³ stated that the data which have been reported on the reliability of the MMPI appear "quite satisfactory." They observed that the reliability coefficient for any psychological test will vary with the population tested. When personality inventories are considered the problem of variance "appears especially in the question of whether the group tested includes normals or hospitalized patients, or both."

²³Ibid., pp. 6-7.

Presumably, personality patterns of normals are more stable than those of psychiatric patients, and personality traits in themselves are somewhat unstable.

On page eight of the Manual²⁴ the following summary of reliability coefficients is given in table form:

TABLE I
Test-Retest Reliability Coefficients Reported
for the Minnesota Multiphasic
Personality Inventory

<u>Scale and Abbreviations</u>	<u>Hathaway</u> and <u>McKinley</u>	<u>Cottle</u>	<u>Holzberg</u> and <u>Alessi</u>
	Normals (N=40-47)	Normals (N=100)	Psychiatric Patients (N=30)
Question (?)			.75
Lie (L)		.46	.85
Validity (F)		.75	.93
K (K)		.76	
Hypochondriasis (Hs)	.80	.81	.67
Depression (D)	.77	.66	.80
Hysteria (Hy)	.57	.72	.87
Psychopathic Deviate (Pd)	.71	.80	.52
Masculinity-Femininity (Mf)	---	.91	.76
Paranoia (Pa)	---	.56	.78
Psychasthenia (Pt)	.74	.90	.72
Schizophrenia (Sc)	---	.86	.89
Hypomania (Ma)	.83	.76	.59

²⁴ Ibid., p. 8.

Concerning the validity of the MMPI the authors wrote:²⁵

. . . a high score on a scale has been found to predict positively the corresponding final clinical diagnosis or estimate in more than 60 per cent of new psychiatric admissions. This percentage is derived from differentiation among various kinds of clinic cases, which is considerably more difficult than mere differentiation of abnormal from normal groups.

Cronbach's²⁶ discussion of the validity of inventories for screening personalities presented evidence on the use of MMPI patterns to distinguish between types of patients and nonpatients. He said:²⁷

It remains a question whether some other investigator could produce a better screening instrument than the MMPI.

.

Results on differential diagnosis with questionnaires other than the MMPI have in general been unencouraging, and in recent years the MMPI has displaced all competing questionnaires for this purpose.²⁸

In the following section on related literature specific studies will point to the reliability and validity of the MMPI in different situations.

IV. REVIEW OF RELATED LITERATURE

A review of the literature reveals a scarcity of

²⁵Ibid., p. 6.

²⁶Cronbach, op. cit., pp. 478-485.

²⁷Ibid., p. 483.

²⁸Ibid., p. 485.

research and study on the use of the college and/or university medical services and personality traits. Staton and Rutledge²⁹ using ninety-five men and women subjects from all classes at the University of Florida found a positive and significant relationship between somatic illness and the MMPI scales of hypochondriasis, hypomania, psychopathic personality and depression. There seemed to be a greater tendency for these relationships to occur among young women than among young men.

The MMPI profiles of twenty neurodermatitis and twenty-nine nonfunctional skin cases were compared by Gilbertstadt.³⁰ The modal profile for the neurodermatitis sample was a low profile with highest elevations on Hysteria and Hypochondriasis. A high Psychopathic Deviate score was often present. The author concluded that there were several character types found within this disorder. Feingold, *et al.*³¹ administered the MMPI to married female allergy patients. Those with mild skin reactions had significantly more disturbed psychiatric conditions than those with more severe skin reactions.

²⁹Wesley Staton and John A. Rutledge, "Measurable Traits of Personality and Incidence of Somatic Illness Among College Students." The Research Quarterly, Vol. 26, No. 2, May, 1955, 197-204.

³⁰Harold Gilbertstadt, "A Modal MMPI Profile Type in Neurodermatitis." Psychosomatic Medicine, 24(5), 1962, 471-476.

³¹B. F. Feingold, F. S. Gorman, Margaret Singer, and K. Schlesinger, "Psychological Studies of Allergic Women," Psychosomatic Medicine, 24(2), 1962, 193-202.

Smith's³² hypothesis that certain personality traits were associated with allergic disorders, and that these traits resemble those discovered in investigation of specific allergic disorders was supported by evidence. He found a significant difference between allergics and non-allergics on five of the MMPI scales: F, Hs, Pt, Sc, and Ma. The D scale approached significance.

A study was done by Hanvik³³ to determine whether the MMPI could be used to differentiate between male patients with low-back pain and those with low-back pain, but with no evidence of organic disease. Statistically significant differences between the two groups were found on six scales: Hs, D, Hy, Pd, Pt, and Sc. The functional patients scored higher. The profiles for this group were neurotic in type with elevations on Hs and Hy with D relatively low and a slight rise on Pt. Gilberstadt and Farkas³⁴ found that the MMPI indicated severe depression more frequently in multiple

³²Ronald Smith, "A Minnesota Multiphasic Personality Inventory Profile of Allergy," Psychosomatic Medicine, 24(2), 1962, 203-209.

³³L. J. Hanvik, "MMPI Profiles in Patients with Low-Back Pain," Journal of Consulting Psychology, 15, 1951, 350-353.

³⁴Harold Gilberstadt and Edwin Farkas, "Another Look at MMPI Profiles in Multiple Sclerosis," Journal of Consulting Psychology, 25(5), 1961, 440-444.

sclerosis patients than in the controls. Zimet and Berger³⁵ used the MMPI and the DAP (Draw-a-Person) test to study emotional factors in primary glaucoma. Two MMPI scales showed controls to have more and the glaucoma group to have fewer pathological scores. These findings were supported by the DAP.

Dunbar³⁶ discussed personality studies and cancer victims. She wrote that in general these patients were creative, but that the creativity was frustrated either by their own behavior or by those close to them. They were hard workers, but tired easily. They seemed to be confused about their goals and what they wanted from life. The patients with extraordinary resistance to cancer were able to avoid or reduce stress. She (Dunbar) cited research by Blumberg, West, and Ellis in which it was found that in patients who were polite and unable to express aggression there was rapid growth of neoplasms, whereas, in those who had "more expressive and sometimes bizarre personalities" the growth was slow. These researchers summarized their observations in this way:

1. A comparison has been made of the personality characterization of cancer patients with rapidly advancing disease and similar cases in which the period of survival was far longer than the average expectancy.

³⁵Carl N. Zimet and Allan S. Berger, "Emotional Patterns in Primary Glaucoma," Psychosomatic Medicine, XXI(5), 1960, 391-399.

³⁶Dunbar, op. cit., p. 144-145.

2. The psychological differences between patients in these two extreme clinical groups were of such magnitude that in a significantly high percentage of cases they were readily detectable from the results of a single, relatively simple, objective test, the Minnesota Multiphasic Personality Inventory.
3. The data obtained suggest that longstanding intense emotional stress may exert a profoundly stimulating effect on the growth rate of an established cancer in man.

In the discussion of high disability illness syndromes Dunbar³⁷ by citing research and clinical experience shows chronic emotional stress, for which the groundwork is generally laid in infancy and childhood to be operative in or "triggering" such conditions as metabolic and endocrine disorders, obesity, diabetes, hemic and lymphatic disorders, central nervous system syndromes, musculoskeletal disorders, rheumatic diseases, disorders of coordination, osseous disorders, dental syndromes, gastro-intestinal diseases, respiratory diseases, allergy, genitourinary syndromes, disturbances in fertility and sterility, vasomotor, trophic and skin disorders, and disorders of the special senses.

The accident syndrome cannot be overlooked in any study of personality and disorders. Again referring to the work of Dunbar it has been found that accidents cause more than two-thirds of the deaths, and more than two-thirds

³⁷Ibid., pp. 152-317.

of the years of incapacity before the age of 35. Evidence shows that 80-90 per cent of all accidents are due to personality factors. A study of the personalities of patients in conjunction with their illness histories and even with military or industrial accidents indicates that very few accidents or illnesses are due solely to external agents.³⁸

The results of the above eight studies, selected from twenty listed in the bibliography, were found to be representative of the wealth of research carried out in the area of personality and its effect on illness. The results of these investigations strongly suggest a positive significant relationship between maladjusted personalities and illness. Therefore, it would seem logical to expect a relationship to exist between illnesses of college students and their personality patterns.

A search of the literature yielded no studies concerning somatic illness and academic achievement. However, there were numerous reports of research dealing with personality and/or emotional stress and academic achievement.

A clinical study of academic underachievers conducted by Neugeboren³⁹ at Yale demonstrated that patterns of academic performance are related to aspects of personality structure. He found that concentration difficulties, lack of ability to be self-directing, inability to set up goals, and lack of motivation to achieve goals were difficulties of

³⁸Ibid., pp. 62-65.

³⁹Wedge, op. cit., pp. 63-94.

long standing which interfered with achievement. In addition, he listed pressure to make decisions in social relations, vocational choices, and sexual identity as sources of conflict which dissipated energy from the academic area.

Stone and Ganung⁴⁰ conducted a four year follow-up study of 126 female students at The Utah State Agriculture College. They attempted to see the difference in success for four years of college between those with high and normal scores on the MMPI. They found that those girls who scored high (T of 70 or above) on one or more of the MMPI scales received lower grade point averages than those who scored "normal." Significantly more of the "normals" graduated, but there was no significance in the comparative number of quarters completed.

Seegars⁴¹ (University of Kentucky) in further investigation of an MMPI scale for predicting college achievement found no significant results.

In light of these research conclusions it would appear that personality patterns have an effect on illnesses, and also on academic achievement. Whether there is a relationship between illness of college students as shown by use of medical services, and personality patterns, or between use of medical services and academic achievement is an open question.

⁴⁰David R. Stone and George R. Ganung, "A Study of Scholastic Achievement Related to Personality as Measured by the Minnesota Multiphasic Inventory," The Journal of Educational Research, 1(2), October 1956, 155-156.

⁴¹James E. Seegars, Jr., "A Further Investigation of an MMPI Scale for Predicting College Achievement," Personnel Guidance Journal, 41(3), 1962, 251-253.

V. ORGANIZATION OF THE STUDY

The remainder of this study will be divided into three chapters which will treat the following topics: Chapter II, Procedures Used in the Study, will include a description of the selection of subjects, determination of high attenders and low attenders at Medical Services; administration, scoring, and interpretation of the MMPI; the statistical design used to determine the relationship between attendance at Medical Services and MMPI personality patterns; source of grade point averages, and the method of determining the relationship between grade point averages and attendance at the Medical Services. Chapter III, Analysis of Data, will be devoted to an analysis of the personality patterns as shown by the MMPI profiles with the comparison of the high and low attenders at the Medical Services, and a comparison of the two groups of subjects in academic achievement. Chapter IV, Summary and Findings, will contain a summary of the study and conclusions which can be made on the basis of the findings in analysis of the data.

CHAPTER II

PROCEDURES USED IN THE STUDY

This chapter will be devoted to the description of the methods and procedures used to secure data for this study. Topics to be discussed are: the selection and grouping of the subjects; the administration, scoring, and interpretation of the MMPI; the source of grade point averages; and the statistical technique used to determine the relationship between use of the Medical Services and personality patterns, and the relationship between use of the Medical Services and academic achievement.

I. SUBJECTS

On the basis of attendance at the Medical Services of the Anna Gove Infirmary, 207 subjects were selected from the 1962-63 sophomore class. These women were members of the 1961-62 freshman class who had lived in dormitories. Each subject attended the infirmary at least one time during her freshman year. Only seven of the sophomores had no calls. These girls were not used as subjects since there were not enough to compare with the high attenders, and if pooled with those attending once, they might confound the data. Those women who lived off campus were not used as subjects since many of them called on the family physician and/or were confined to bed at home when ill.

A call was operationally defined as any visit to the Medical Services which was recorded on the medical record of a student. An illness or disorder for which the subject returned for therapy, but was not confined to bed was classified as one call. An illness for which the patient was confined to bed for a period of time was, also, classified as one call. The number of calls for the freshman year of each sophomore was transferred from her medical record to a card with her name on it. These cards were arranged in order from the lowest to the highest number of calls (See Appendix, p. 68, for the number in each category). There were 101 students who made one call, and 106 who made from eight to twenty calls. Since the range of calls per person was relatively small, one to twenty, the group of 101 women with one call was classified as low attenders. The 106 women with from eight to twenty calls were classified as high attenders.

II. ASSESSMENT OF PERSONALITY

The Group Form of the MMPI was selected as the instrument for personality assessment on the basis of its reputation as the best available paper and pencil personality test, the diversity of content, economy of time and simplicity of administration.

The MMPI Manual Inventory Booklets, answer sheets, and profile forms were obtained from the Psychological

Corporation in New York, with the understanding that a clinical psychologist would interpret the profiles.

The University Activity Calendar was checked to determine the most suitable time for administration of the Inventory. A date was set and placed on the calendar. A form letter (Appendix, p. 69) was mailed to each of the selected subjects requesting that she take the test. Assurance was given that the results would not become a part of her record, and that individual identity would become lost in the study. Scoring sheets numbered 1-99 were placed with a list of the low attenders. Those sheets numbered 100-199 were placed with a list of the high attenders. Each group of answer sheets was mixed so that they were not in chronological order. As a subject was given the Inventory Booklet and answer form her name was checked off the list. Thus a roll check was provided. One hundred-thirty-two subjects scored the items of the Inventory during the period designated in the letter. The investigator with two assistants from the faculty administered and supervised the testing. There was no time limit. All subjects took the test in the same room. Participation was voluntary.

A follow-up letter (Appendix, p. 70) was mailed to those absent from the above testing period. Seven periods during two school days were scheduled to give an opportunity for these subjects to check the Inventory. The thirty-two who came at these periods gave a total of 79 per cent (167 of

207) of the subjects who answered the items. There were eighty (79 per cent) of the 101 in the group of low attenders, and eighty-four (79 per cent) of the 106 high attenders.

Each paper was inspected to determine the ? (Question) score, and all scores were found to be in the normal range. Next, the L (Lie) score was obtained as directed in the Manual. The papers, which were marked with special pencils for machine scoring, were mailed to the Testing Bureau of the University of North Carolina at Chapel Hill where they were machine scored. Then the Profile Forms were made according to the directions of the authors.

Two clinical psychologists from different universities, each holding a Ph.D. degree, read the profiles independently. This gave two measures to evaluate the reliability of the ratings. The profiles were interpreted according to normal, neurotic, psychotic, and character disorder patterns.

III. SOURCE OF GRADE POINT AVERAGES

Grade point averages earned during the freshman year (1961-62) appeared to be the most accessible and practical measure of academic achievement. Accordingly, the grade point average earned by each subject during her freshman year was obtained from the Office of the Registrar of the University, and recorded on individual cards. On the basis

of ranked grade points a scale was devised. Each group of subjects (high and low attenders at the Medical Services) was divided into three categories; (1) the number of subjects in the top one-third of the scale, (2) the number in the middle one-third of the scale, and (3) the number in the bottom one-third of the scale.

Earned grade points ranged from one to three and four-tenths when figured to the nearest tenth of a point. The highest possible grade point average in the University grading system is four. One point is given for a grade of D. There were twenty-five intervals of one-tenth from one through three and four-tenths. These were arbitrarily divided in the following manner: eight grades were placed in the upper one-third, nine grades were placed in the middle one-third, and eight grades were placed in the lower one-third. From the cards on which grade points were copied for each subject a tabulation was made of the frequency of distribution of the grades earned by the subjects. This distribution is shown in Table I.

IV. METHOD USED TO DETERMINE RELATIONSHIPS

Because these data did not meet the assumptions underlying the use of parametric statistics, non-parametric statistics were used to evaluate the degree of relationship.

Working from the null hypotheses that (1) there is no relationship between frequency of use of the Medical

TABLE I

FREQUENCY DISTRIBUTION IN THE UPPER, MIDDLE, AND LOWER
THIRDS OF AVERAGE EARNED GRADE POINTS FIGURED TO THE
NEAREST TENTH OF EIGHTY HIGH AND EIGHTY-FOUR LOW
ATTENDERS AT MEDICAL SERVICES

Categories	Scale of Grade Points	High Attendern	Low Attendern
Upper One-third	3.4	0	1
	3.3	1	1
	3.2	1	1
	3.1	1	1
	3.0	0	1
	2.9	4	6
	2.8	3	3
Total	2.7	<u>2</u> 12	<u>3</u> 17
Middle One-third	2.6	1	7
	2.5	3	2
	2.4	2	5
	2.3	8	3
	2.2	6	2
	2.1	10	3
	2.0	7	7
	1.9	6	9
	1.8	<u>6</u> 49	<u>3</u> 41
Total			
Lower One-third	1.7	2	6
	1.6	4	6
	1.5	4	3
	1.4	4	3
	1.3	2	2
	1.2	3	3
	1.1	0	1
	1.0	<u>0</u> 19	<u>2</u> 26
Total			
		80	84

Services and personality traits; and (2) there is no relationship between frequency of use of the Medical Services and academic achievement, the Chi-square (χ^2) method of testing the degree of relationship was used. According to Garrett:¹

The Chi-square test represents a useful method of comparing experimentally obtained results with those to be expected theoretically on some hypotheses. The equation for Chi-square (χ^2) is stated as follows:

$$\chi^2 = \sum \left[\frac{(f_o - f_e)}{f_e} \right]^2$$

in which f_o = frequency of occurrence of observed or experimentally determined facts;

f_e = expected frequency of occurrence on some hypotheses.

. . . The more closely the observed results approximate to the expected, the smaller the Chi-square and the closer the agreement between observed data and the hypothesis being tested. Contrariwise, the larger the Chi-square the greater the probability of a real divergence of experimentally observed from expected results.

¹Henry E. Garrett, Statistics in Psychology and Education (New York: Longmans, Green and Co., 1959), pp. 253-254.

CHAPTER III

PRESENTATION AND ANALYSIS OF DATA

The statistical design used to analyze the data and determine the relationships in this study was the Chi-square (χ^2) test of independence in contingency tables. The null hypotheses were that (1) there is no relationship between frequency of use of the Medical Services and personality traits, and (2) there is no relationship between frequency of use of the Medical Services and academic achievement.

The authors of the MMPI recommend that interpretation of the profiles be made only by persons accredited in a field scientifically oriented in work with problems of psychological adjustment or non-adjustment, and who have special training in the use of the MMPI. Therefore, two qualified clinical psychologists who work in different state universities, independently interpreted the profiles of the subjects for this study.

Several points should be kept in mind regarding the profiles. There may be some difference between raters' interpretations of profiles. The great majority of persons having deviant profiles are not, in the usual sense, mentally ill, nor in need of psychological treatment. Though the MMPI terminology is strongly influenced by American psychiatric practice, the profile is not to be regarded as being chiefly

used for the diagnosis of psychiatric disorders. A deviant profile, alone, does not necessarily mean that the person is handicapped.

The authors of the Inventory further recommend that the profile be considered from the standpoint of the several highest and lowest points, not on the standing of any one scale. They suggest that the interpreter think of the profiles of both the normal and abnormal persons as having some similarity to three generalized patterns: (1) the neurotic, (2) the character disorders (behavior problem), and (3) the psychotic.

The neurotic triad, Hs (hypochondriasis), D (depression), and Hy (hysteria), tends to be high in neurotic patients. Pt (psychasthenia) is usually considered relative to neuroticism and is considered a fourth indicator. Of the three classifications above, the neurotic is less handicapped and responds to treatment more readily, where it is indicated.

The character disorder (behavior problem) profiles are dominated by Pd (psychopathic deviate), Mf (tendency toward masculinity or femininity of interests), and Ma (hypomania) with Pa (paranoia) less clearly related. These individuals are more likely to be in conflict with society, and environment may be of importance to them.

Psychotic profiles show scales Sc (schizophrenia) and Pa (paranoia) of greatest importance, with D (depression)

and Ma (hypomania) also related to the pattern. The psychotic individuals are generally more deeply and obviously disturbed.

The K factor was included in the analysis because a high K score, though it invalidates the profile, tends to be representative of defensiveness against psychological weakness. It may indicate a defensiveness that borders on deliberate distortion to make a more "normal" appearance. A low K score is indicative that the individual is overly candid and self-critical. It may also be the result of a deliberate attempt to make a bad impression.

These generalizations are subject to exception, but are useful in treating group data.²

I. COMPARISON OF FINDINGS OF RATER I WITH RATER II

As a check on the reliability of the initial interpreter a second clinical psychologist judged the MMPI profiles of the subjects. Each profile was rated as normal, neurotic, psychotic, character disorder, or K. Table II is a contingency table of the observed and expected frequencies of each rater for all subjects (high and low attenders). The Chi-square test with four degrees of freedom (df) was significant at the .01 level of probability. Such lack of

²Hathaway and McKinley, op. cit., pp. 24-25.

agreement could be expected to occur one time out of one hundred by chance. There appears to be a difference between the interpretations of the two raters, however, on closer examination of the data it will be seen that the two are in close agreement on normals, character disorders, and K. The areas of disagreement are in the classifications of the neurotic and psychotic patterns. Rater I classified more profiles as neurotic (27) than did Rater II (9); while Rater II classified more profiles as psychotic (23) than did Rater I (8).

TABLE II

COMPARISON OF INTERPRETATIONS OF TWO RATERS OF THE
MMPI PROFILES OF HIGH AND LOW ATTENDERS AT THE
MEDICAL SERVICES USING FIVE CLASSIFICATIONS

Rater	Normal	Neurotic	Psychotic	Character Disorder	K	Totals
I						
f_o	107	27	8	10	12	164
f_e	(108.5)	(18)	(15.5)	(8.5)	(13.5)	
II						
f_o	110	9	23	7	15	164
f_e	(108.5)	(18)	(15.5)	(8.5)	(13.5)	
Totals	217	36	31	17	27	328

$$\chi^2=17.16 \quad df=4 \quad P \text{ is less than } .01$$

When the profiles are classified into normal and deviant patterns the two raters are in close agreement as is shown in Table III. A Chi-square of .121 was obtained.

This shows a very close agreement between the interpreters in the classification of normals and deviants.

TABLE III

COMPARISON OF INTERPRETATION OF MMPI PROFILES OF EIGHTY HIGH AND EIGHTY-FOUR LOW ATTENDERS AT MEDICAL SERVICES OF RATER I WITH RATER II WITH TWO CLASSIFICATIONS, NORMALS AND DEVIANTS

Rater		Normals	Deviants	Totals
I	f _o	107	57	164
	f _e	(108.5)	(55.5)	
II	f _o	110	54	164
	f _e	(108.5)	(55.5)	
Totals		217	111	328

$$\chi^2=0.121 \quad df=1 \quad P \text{ is greater than } .70$$

The two psychologists were in close agreement in classifying the profiles of the subjects into normal and deviant patterns (Table III). Their greatest divergence was in the interpretation of neurotic and psychotic patterns (Table II). This agreement and divergence is shown again in Table IV. In spite of this difference both raters were consistent in that the high attenders show a greater number and percentage of subjects in the deviant patterns of personality than do the low attenders.

TABLE IV

THE NUMBER AND PERCENTAGE OF EIGHTY HIGH AND EIGHTY-FOUR
LOW ATTENDERS AT THE MEDICAL SERVICES PLACED IN EACH
MMPI PERSONALITY PATTERN BY RATER I AND RATER II

Person- ality Patterns	High Attenders (N=80)				Low Attenders (N=84)			
	Rater I		Rater II		Rater I		Rater II	
	No.	%	No.	%	No.	%	No.	%
Normal	43	53.75	45	56.25	64	76.20	65	77.39
Neurotic	16	20.00	6	7.50	11	13.09	3	3.57
Psychotic	5	6.25	14	17.50	3	3.57	9	10.71
Character Disorders	7	8.75	4	5.00	3	3.57	3	3.57
K	9	11.25	11	13.75	3	3.57	4	4.76
Totals	80	100.00	80	100.00	84	100.00	84	100.00

A study of Table IV shows that Rater I found 53.75 per cent of the high attenders to be normal, and Rater II found 56.25 per cent to be normal. Conversely, the interpretations of both raters show a greater percentage of the low attenders in the normal pattern with a decreasing percentage in each deviant pattern. It is interesting that on a percentage basis the divergence between interpreters shifts from the neurotic and psychotic patterns (Tables II and III) to the neurotic and character disorder patterns.

II. RELATIONSHIP BETWEEN ATTENDANCE AT MEDICAL SERVICES AND PERSONALITY PATTERNS

Since there was a difference in the interpretations of the two raters, particularly in the neurotic and psychotic patterns it was felt that there should be a check and comparison for Rater II as well as Rater I.

The contingency table showing the interaction between attendance at the Medical Services and the Personality patterns as interpreted by Rater I is shown in Table V. The Chi-square of 10.08 is significant ($P < .05$). Therefore, the null hypothesis may be rejected, and it may be concluded from Rater I's interpretation that a significant relationship exists between use of the Medical Services and personality traits.

TABLE V
COMPARISON OF ATTENDANCE AT MEDICAL SERVICES
AND PERSONALITY PATTERNS OF HIGH AND LOW
ATTENDERS AS INTERPRETED BY RATER I
FROM MMPI PROFILES

Attend- ance		Normals	Neurotic	Psychotic	Character Disorders	K	To- tals
High	f_o	43	16	5	7	9	80
Attend- ers	f_e	(52.20)	(13.17)	(3.90)	(4.88)	5.88	
Low	f_o	64	11	3	3	3	84
Attend- ers	f_e	(54.80)	(13.83)	(4.10)	(5.12)	(6.15)	
Totals		107	27	8	10	12	164

$$\chi^2=10.08 \quad df=4 \quad P \text{ is less than } .05$$

Reference to Table V shows that those subjects who had a high attendance at the infirmary had fewer normal, therefore, more deviant personality patterns than the low attenders.

The distribution of personality patterns according to high and low attenders for Rater II is shown in Table VI. The computed Chi-square for this interpretation was 8.83 with four degrees of freedom which approaches significance at the .05 level of probability (χ^2 of 9.488 = P at .05). Though the Chi-square of 8.83 is not significant it lies only .599 below the .05 level of probability.

TABLE VI
COMPARISON OF ATTENDANCE AT MEDICAL SERVICES
AND PERSONALITY PATTERNS OF HIGH AND LOW
ATTENDERS AS INTERPRETED BY RATER II
FROM MMPI PROFILES

Attend- ance	Normal	Neurotic	Psy- chotic	Character Disorder	K	To- tals
High Attend- ers	45 (53.66)	6 (4.39)	14 (11.22)	4 (3.41)	11 (7.32)	80
Low Attend- ers	65 (56.34)	3 (4.61)	9 (11.78)	3 (3.59)	4 (7.68)	84
Totals	110	9	23	7	15	164

$$\chi^2=8.839 \quad df=4 \quad P \text{ is greater than } .05$$

III. PERSONALITY PATTERNS OF HIGH ATTENDERS AS INTERPRETED BY RATERS

A comparison of the two raters' interpretations of the personality patterns of the high attenders is found in Table VII. The obtained Chi-square of 9.8708 which is significant at the .05 level of probability again shows the lack of agreement between the interpretations of the neurotic and psychotic patterns. Rater I placed six subjects in the neurotic classification and Rater II placed sixteen in this category. In the psychotic grouping there was a reversal with Rater I placing fourteen in this pattern to Rater II's five. When the number of profiles in the neurotic and psychotic patterns were combined there was close

agreement on high attenders between the interpretations of the two clinical psychologists.

IV. PERSONALITY PATTERNS OF LOW ATTENDERS AS INTERPRETED BY RATERS

Table VIII shows the distribution of the personality patterns of the low attenders at the Medical Services as judged by the two raters. The obtained Chi-square of 8.8648 was not significant at the .05 level of probability.

The difference in placement was in the neurotic and psychotic patterns, which was consistent with earlier findings. Rater I placed three profiles in the neurotic pattern, while Rater II placed eleven here. Rater I placed nine profiles in the psychotic group while Rater II placed only three here. When neurotic and psychotic patterns for each interpreter were added, agreement was close in the deviation from normal (Rater I = 12; Rater II = 14). Close agreement was found in the other pattern.

V. RELATIONSHIP BETWEEN ATTENDANCE AT MEDICAL SERVICES AND ACADEMIC ACHIEVEMENT

The second problem with which this study was concerned was the relationship between attendance at the Medical Services and academic achievement as measured by grade point averages. A contingency table of grade points and attendance at the infirmary is shown in Table IX. The computed

TABLE VII

COMPARISON OF THE INTERPRETATIONS BY TWO RATERS OF
THE MMPI PROFILES WITH FIVE CLASSIFICATIONS OF
THE HIGH ATTENDERS AT THE MEDICAL SERVICES

Rater		Normal	Neurotic	Psychotic	Character Disorder	K	Totals
I	f_o	43	16	5	7	9	80
	f_e	(44.00)	(11.00)	(9.5)	(5.5)	(10.00)	
II	f_o	45	6	14	4	11	80
	f_e	(44.00)	(11.00)	(9.5)	(5.5)	(10.00)	
Totals		88	22	19	11	20	160

$$\chi^2=9.8708 \quad df=4 \quad P \text{ is less than } .05$$

TABLE VIII

COMPARISON OF THE INTERPRETATIONS BY TWO RATERS OF
THE MMPI PROFILES WITH FIVE CLASSIFICATIONS OF
THE LOW ATTENDERS AT THE MEDICAL SERVICES

Rater		Normal	Neurotic	Psychotic	Character Disorder	K	Totals
I	f_o	64	11	3	3	3	84
	f_e	(64.50)	(7)	(6)	(3)	(3.50)	
II	f_o	65	3	9	3	4	84
	f_e	(64.50)	(7)	(6)	(3)	(3.50)	
Totals		129	14	12	6	7	168

$$\chi^2=8.8648 \quad df=4 \quad P \text{ is greater than } .05$$

Chi-square was 2.5687 with two degrees of freedom. A Chi-square of 2.5687 with two degrees of freedom lies between the 0.20 and 0.30 level of probability. Therefore, the null hypothesis that there is no relationship between the use of Medical Services and academic achievement is not rejected. The observed and expected results are nearly equal and may be attributed to sampling fluctuations.

TABLE IX
COMPARISON OF ATTENDANCE AT MEDICAL SERVICES
AND EARNED GRADE POINTS OF HIGH AND LOW
ATTENDERS AT THE MEDICAL SERVICES

Attendance		No. in top 1/3 Grades	No. in middle 1/3 Grades	No. in bottom 1/3 Grades	Totals
High	f_o	12	49	19	80
Attenders	f_e	(14.15)	(43.90)	(21.95)	
Low	f_o	17	41	26	84
Attenders	f_e	(14.85)	(46.10)	(23.05)	
Totals		29	90	45	164

$$\chi^2 = 2.5687 \quad df = 2 \quad P \text{ is less than } 0.30$$

CHAPTER IV

SUMMARY, CONCLUSIONS, AND SUGGESTIONS FOR FURTHER STUDY

I. SUMMARY

The purpose of this study was two-fold: (1) to determine the relationship between the frequency of use of the Medical Services and personality traits of students, and (2) to determine the relationship of frequency of use of the Medical Services to academic achievement.

Higher education is assuming responsibility for more aspects of student welfare than intellectual development. Two important functions of the University are the counseling and guidance services and the medical services. These services make possible a fuller realization of the potentialities of each student. Information from personality inventories seems to be helpful in giving information and understanding of psychological factors which help to guide the students to better adjustment to life situations. A demonstrated relationship between personality patterns and infirmary attendance could be of value to the Medical Services, to the Health Instruction Division, and to the Counseling Service in planning their activities, and helping individual students toward better mental health.

A review of the literature revealed a scarcity of research on the use of University Medical Services and personality traits. Studies read indicated a relationship between personality and illness. Staton and Wesley (p. 24) found a significant relationship between somatic illness and personality traits of college students. Gilberstadt (p. 24) found several character types associated with neurodermatitis. According to Feingold, et al. (p. 24) female allergy patients showed disturbed psychiatric conditions. Hanvik (p. 25) found male patients with functional low-back pain to be neurotic. Dunbar (p. 26) wrote of the relationship between personality and the development of cancer. She (Dunbar p. 27) found a close relationship between the personalities of patients and accidents. The results of these and other studies listed in the bibliography suggest a positive significant relationship between maladjusted personalities and illness.

Neugeboren (p. 28) and Stone and Ganung (p. 29) found a relationship between personality and academic achievement. Seegars (p. 29), in an investigation of an MMPI scale for predicting college achievement, found no significant results.

In light of these research results it would appear that personality patterns have an effect on illness, and might have an effect on academic achievement.

The subjects for this study were 164 women selected

from the 1962-63 sophomore class. The subjects were chosen on the basis of attendance at the Medical Services (The Anna Gove Infirmary of the University of North Carolina at Greensboro). Subjects were divided into two groups, high attenders and low attenders, on the basis of the number of calls reported on their medical records for their freshman year (1961-62). There were eighty women who had eight or more calls. These were the high attenders. The eighty-four students in the low attender group each had one call.

The Group Form of the Minnesota Multiphasic Personality Inventory was administered to the 164 subjects. Answer sheets were scored by machine, and profiles drawn from them. Two clinical psychologists from universities in different states independently interpreted the profiles. Each profile was placed in one of five personality patterns: normal, neurotic, psychotic, character disorder, or K (invalid).

The Chi-square test of independence in contingency tables was used to test the null hypothesis that no relationship would be found between attendance at the Medical Services and the personality patterns of students.

Grade point averages earned by the subjects during their freshman year were obtained from the Office of the Registrar of the University. On the basis of ranked grade points a scale was devised. Each group of subjects (high attenders and low attenders at the Medical Services) was

divided into three categories: (1) the number of subjects in the top one-third of the scale, (2) the number in the middle one-third of the scale, and (3) the number in the bottom one-third of the scale.

The Chi-square test of independence in contingency tables was used to test the null hypothesis that no relationship would exist between attendance at the Medical Services and academic achievement.

Findings. The most important findings in this investigation were:

1. A significant relationship was found to exist between the use of the Medical Services and personality patterns of college women as measured by the MMPI. The obtained Chi-square, using the interpretations of the first rater was 10.08 with four degrees of freedom. This is significant ($P < .05$). A Chi-square of 8.839 with four degrees of freedom was obtained for the interpretations of the second rater. This lies between the 0.10 and 0.05 level of probability, and is only .549 less than 9.488, the Chi-square at the .05 level of probability. A comparison of normals and deviants as judged by the two raters was high in agreement. A Chi-square of 0.121 with one degree of freedom ($P > 0.70$) was obtained.
2. A significantly greater number of college women with high attendance records at the Medical Services had deviant personalities than did the low attenders. The computed Chi-square was 9.8708 with four degrees of freedom, which is significant at the .05 level of probability. The null hypothesis of no relationship was not accepted.
3. The relationship between the use of Medical Services and personality patterns of college women with low attendance at the Medical Services was not statistically significant. However, the obtained Chi-square with four degrees of freedom was 8.8648 which is .623 under the .05 level of significance.

4. A significant relationship was not found between attendance at the Medical Services and academic achievement. The computed Chi-square was 2.5687 with two degrees of freedom. This lies between the 0.20 and 0.30 level of probability and is not statistically significant for this study. Therefore the null hypothesis of no relationship was not rejected.

II. CONCLUSIONS

The following conclusions were drawn from the findings of this study.

1. A significantly greater number of the University women with high attendance records at the Medical Services have deviant personality patterns on the MMPI profiles than do the low attenders.
2. A significant relationship exists between the use of the Medical Services and personality traits as measured by the MMPI.
3. There is not a significant relationship between the use of the Medical Services and the academic achievement of the subjects in this study.

The results of this study hold important implications for college and university personnel. The medical staff has some evidence which points to the necessity of considering more than the physical complaints of students who come to them for treatment. A psychiatrist as a full time member of the Medical Services staff is not the common practice. Perhaps more thought should be given to the employment of clinical psychologists and psychiatrists by colleges and universities in order that all students may have the care needed to help them become self-directed and productive citizens, not only of the college and community, but of the world.

Other university personnel may profit from such data. The vocational counselors may better guide students into professions and areas of work for which they are temperamentally fitted with knowledge of their personality patterns. Academic advisors and teachers may also help motivate students to greater learning and accomplishment through an understanding of individual personalities. In addition, the health instruction faculty may more ably counsel students who bring health problems to conferences, and unburden other problems. With more knowledge and understanding of personality factors drop-outs and failures may be reduced. This knowledge should be gained and put into use early in the college career in order that the students may realize the utmost from their college experience and from life.

As long as mental illness remains the major health problem in terms of occupied hospital beds, it would appear that colleges and universities have an obligation to promote the best mental health possible among those of our population who may be considered above the average in potential. There also appears to be a need for more concrete evidence on which to base health activities in educational institutions. Moreover, there is a need for more research in this area. The utilization of such data as those found in this study could be of great value in overall planning to aid both students and administrators.

III. SUGGESTIONS FOR FURTHER STUDY

1. A similar study using drop-outs and non-attenders at the infirmary might give a more complete picture of the personality patterns of freshmen women in relation to use of the Medical Services.
2. A similar study in which calls to the Medical Services are redefined in order that the absolute number of calls, and the duration of a disorder may be given weight, might be of more significance in predicting the behavior of freshmen women.
3. A follow-up study using these subjects in their senior year might show the effectiveness of the college experience itself, as well as the effectiveness of the various counseling, guidance and academic services in bringing about improvement or change in personality patterns.
4. There might be made from these data an item analysis of the entire 556 items of the MMPI against the dichotomized criteria of frequency of attendance at the Medical Services and develop a scale for differentiating between high and low attenders at the Medical Services.

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APPENDIX

Sample Items from the Minnesota Multiphasic
Personality Inventory

1. During the past few years I have been well most of the time.
2. I do not tire quickly.
3. I do not dread seeing a doctor about a sickness or injury.
4. There seems to be a fullness in my head or nose most of the time.
5. At times I have fits of laughing and crying that I cannot control.
6. I seem to be about as capable and smart as most others around me.
7. I am greatly bothered by forgetting where I put things.
8. I do not often notice my ears ringing or buzzing.
9. I have few or no pains.
10. My hands and feet are usually warm enough.
11. I hardly ever notice my heart pounding and I am seldom short of breath.
12. I am not bothered by a great deal of belching of gas from my stomach.
13. My sleep is fitful and disturbed.
14. I dream frequently.
15. There is very little love and companionship in my family as compared to other homes.
16. My parents have often objected to the kind of people I went around with.
17. Some of my family have habits that bother and annoy me very much.

18. I have reason for feeling jealous of one or more members of my family.
19. I loved my mother.
20. I am apt to pass up something I want to do because others feel that I am not going about it in the right way.
21. I have often had to take orders from someone who did not know as much as I did.
22. I usually work things out for myself rather than get someone to show me how.
23. It makes me impatient to have people ask my advice or otherwise interrupt me when I am working on something important.
24. I like to read about history.
25. I enjoy detective or mystery stories.
26. I am attracted by members of the opposite sex.
27. A large number of people are guilty of bad sexual conduct.
28. I am very religious (more than most people).
29. I have been inspired to a program of life based on duty which I have since carefully followed.
30. During one period when I was a youngster I engaged in petty thievery.
31. My conduct is largely controlled by the customs of those about me.
32. I frequently find it necessary to stand up for what I think is right.
33. I believe in law enforcement.
34. People generally demand more respect for their own rights than they are willing to allow for others.
35. I do not blame a person for taking advantage of someone who lays himself open to it.

36. I think nearly anyone would tell a lie to keep out of trouble.
37. If several people find themselves in trouble, the best thing for them to do is to agree upon a story and stick to it.
38. It is all right to get around the law if you don't actually break it.
39. I do not mind meeting strangers.
40. I am never happier than when alone.
41. I am quite often not in on the gossip and talk of the group I belong to.
42. I like to go to parties and other affairs where there is lots of loud fun.
43. I refuse to play some games because I am not good at them.
44. I find it hard to make talk when I meet new people.
45. Most any time I would rather sit and daydream than to do anything else.
46. I am easily embarrassed.
47. What others think of me does not bother me.
48. It makes me uncomfortable to put on a stunt at a party even when others are doing the same sort of things.
49. I strongly defend my own opinions as a rule.
50. It is not hard for me to ask help from my friends even though I cannot return the favor.
51. It is always a good thing to be frank.
52. I resent having anyone take me in so cleverly that I have had to admit that it was one on me.
53. I am apt to hide my feelings in some things, to the point that people may hurt me without their knowing about it.

54. Often I can't understand why I have been so cross and grouchy.
55. I wish I could be as happy as others seem to be.
56. I usually feel that life is worth while.
57. I have had periods of days, weeks, or months when I couldn't take care of things because I couldn't "get going."
58. I frequently find myself worrying about something.
59. I have certainly had more than my share of things to worry about.
60. I am happy most of the time.
61. I have periods in which I feel unusually cheerful without any special reason.
62. I have periods of such great restlessness that I cannot sit long in a chair.
63. I am often said to be hotheaded.
64. At times I feel like smashing things.
65. I have a habit of counting things that are not important such as bulbs on electric signs, and so forth.
66. At times I have a strong urge to do something harmful or shocking.
67. At one or more times in my life I felt that someone was making me do things by hypnotizing me.
68. I commonly wonder what hidden reason another person may have for doing something nice for me.
69. Lightning is one of my fears.
70. Dirt frightens or disgusts me.
71. I am afraid of finding myself in a closet or small closed place.
72. No one cares much what happens to you.
73. The future is too uncertain for a person to make serious plans.

74. At times I have worn myself out by undertaking too much.
75. The one to whom I was most attached and whom I most admired as a child was a woman. (Mother, sister, aunt, or other woman.)
76. The man who had most to do with me when I was a child (such as my father, stepfather, etc.) was very strict with me.
77. I do not always tell the truth.
78. If I could get into a movie without paying and be sure I was not seen I would probably do it.
79. I do not read every editorial in the newspaper every day.
80. Once in a while I put off until tomorrow what I ought to do today.

Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

Name 111

Address _____

Occupation _____

Education _____

Marital Status _____

Date Tested _____

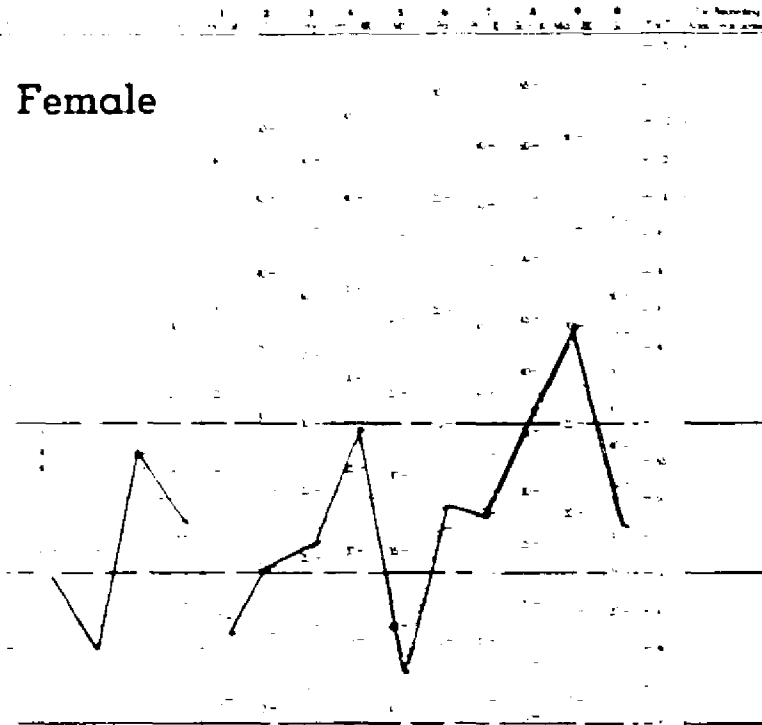
Age _____

Referred by _____

NOTES



Female



1 2 3 4 5 6 7 8 9 10
42 51 57 69 37 59 58 72 85 56

96' 4 670 - 51 1.10.16

Raw Score	1	10	16	1	20	21	21	43	11	14	21	27	31	
K to be added				6			6			16	16	3		
Raw Score with K				7			27			30	37	30		



Signature _____

Date _____

Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

Scorer's Initials

Name

Address

Occupation

Education

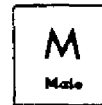
Marital Status

Date Tested

Age

Referred by

NOTES



Male

Raw Score _____
 K to be added _____
 Raw Score with K _____



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 THE PSYCHOLOGICAL CORPORATION
 304 East 45th Street
 New York 17, New York

MM-425

Signature _____

Date _____

FREQUENCY OF CALLS OF 1962-63 SOPHOMORE STUDENTS
AT THE UNIVERSITY MEDICAL SERVICES DURING
THEIR FRESHMAN YEAR 1961-62

Number of Calls	Number of Calls, Students Not Admitted	Number of Calls, Students Admitted	Total
1	100	1	101
2	109	16	125
3	127	16	143
4	83	32	115
5	51	26	77
6	43	14	57
7	28	29	57
8	14	23	37
9	12	12	24
10	7	6	13
11	2	10	12
12	3	1	4
13	0	4	4
14	3	4	7
15	1	2	3
16	0	0	0
17	0	1	1
18	0	0	0
19	0	1	1
20	<u>0</u>	<u>1</u>	<u>1</u>
Totals	583	199	782

The Woman's College, U.N.C.
Greensboro, North Carolina
March 19, 1963

Dear Miss

In order to learn more about the needs and interests of the students at The Woman's College, I am conducting a study of the personality traits of this year's sophomore class. The results of this study will not become a part of your college records in any way. They will be used only for a scientific study.

We are interested only in group results and no individual will be identified.

You have been selected as one of the students to take a pencil and paper inventory. It is important to the success of the study that you give about an hour of your time to answer the questions in the inventory. Papers will be numbered in such a way that no individual can be identified after the answers are turned in.

The inventory will be administered in Room 116, Science Building at 6:30 p.m. on March 26, 1963. I will look for you at that time.

We do appreciate your help and cooperation in this research. If there are any questions, please see me in my office, Room 200, McIver.

Remember! 6:30 p.m., Tuesday, March 26, 1963, Room 116, Science Building.

Thank you.

Esther B. White (Mrs.)
Department of Health
The Woman's College, U.N.C.

The Woman's College, U.N.C.
Greensboro, North Carolina
March 27, 1963

Dear Miss

Due to conflicts some of the students chosen to check the personality inventory on Tuesday, March 26 were unable to attend. I am administering the inventory for you at the following hours in McIver Building.

8:00 a.m., Tues., April 2	Room 230 McIver
11:00 a.m., Tues., April 2	Room 230 McIver
2:00 p.m., Tues., April 2	Room 229 McIver
9:00 a.m., Wed., April 3	Room 229 McIver
10:00 a.m., Wed., April 3	Room 229 McIver
2:00 p.m., Wed., April 3	Room 229 McIver
3:00 p.m., Wed., April 3	Room 229 McIver

Will you come at the hour which is most convenient for you?
If none of these periods fits into your schedule will you see me as soon as possible in Room 200 McIver and arrange for a time convenient for you?

Thank you.

Esther B. White (Mrs.)
Department of Health

VITA

Esther Boyd White was born in Elaine, Arkansas on January 7, 1911. Her elementary and junior high school education was in the public schools of Arkansas and Arizona. Her high school work was completed at the Academy of the Arkansas Agricultural and Mechanical College, Monticello, Arkansas in 1928. She received a degree of Liscensed Instructor from this institution in 1930. The Bachelor of Arts degree with a major in history was awarded by the Arkansas Agricultural and Mechanical College in 1946. In 1953-54 she was a graduate assistant in the Department of Health and Physical Education at the Louisiana State University where she began working toward the Master of Science degree which was awarded in June, 1955. She received a Master in Public Health degree from the University of North Carolina, Chapel Hill in August, 1961. The Doctor of Education degree with a major in Health Education was awarded by the Louisiana State University in January, 1964.

Mrs. White taught in the public schools of Arkansas for seventeen years. From 1954 to 1957 she was instructor in Health and Physical Education at the Arkansas State Teachers' College, Conway, Arkansas. In September, 1957 she joined the faculty of The Woman's College of the University of North Carolina at Greensboro (now the University

of North Carolina at Greensboro) as instructor in the Department of Health. She is, currently, assistant professor of health in the newly created Department of Health, Physical Education and Recreation at the University of North Carolina, Greensboro.

The author has been active in civic and professional organizations. She is a member of the North Carolina Association for Health, Physical Education and Recreation; the American Association for Health, Physical Education and Recreation; the North Carolina Association of Health Educators; the American Public Health Association, the American School Health Association; and the Faculty Science Club, U.N.C.G.. She has served in official capacities at the local, state and district levels. She is the current Vice-President of the Health Division of the Southern District, AAHPER.

EXAMINATION AND THESIS REPORT

Candidate: Esther Boyd White

Major Field: Health Education

Title of Thesis: A Study of the Frequency of Use of Medical Services in Relation to Personality Factors and to the Academic Achievement of Students at the University of North Carolina at Greensboro

Approved:

Samuel S. Clark

Major Professor and Chairman

Walter Gossick

Dean of the Graduate School

EXAMINING COMMITTEE:

J. W. Kistler

Jack K. Nelson

Rodney Johnson

Alfred H. Hays

Elizabeth Moore

L. S. Herrell

J. O. Gray

Date of Examination:

Jan 13, 1964